

## **Appendix K**

### **Cultural Resource Investigations for Waste Area Group 5 on the Idaho National Engineering and Environmental Laboratory**

March 2000

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***Brenda Ringe Pace***



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**March 2000**

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## **ABSTRACT**

Waste Area Group 5 (WAG 5) includes two main facility complexes on the Idaho National Engineering and Environmental Laboratory (INEEL): the Auxiliary Reactor Area (ARA) and the Power Burst Facility (PBF). Cultural resource investigations through the INEEL Cultural Resource Management Office have been ongoing within the WAG 5 area for nearly two decades. Activities that have been completed include: identification of archaeological resources in previously unexamined areas, identification of historically significant nuclear structures, protection of identified cultural resources during ground disturbing projects, test excavations to assess significance and potential for nomination to the National Register of Historic Places, excavations and protection of sensitive Native American resources, Historic American Engineering Record documentation of historic buildings slated for demolition, and consultation with the State Historic Preservation Office and Shoshone-Bannock Tribes. This report summarizes the findings of these investigations.



## **FOREWORD**

Cultural resource investigations like those summarized herein are an important element of overall cultural resource management at the Idaho National Engineering and Environmental Laboratory (INEEL). Several laws provide the structure for cultural resource management on federal lands and mandate consideration of cultural resources during federal undertakings. Among these are the National Historic Preservation Act, Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act. On the INEEL, the requisite cultural resource investigations are often conducted as part of an assessment process that requires completion of Environmental Checklists, Environmental Assessments, and/or Environmental Impact Statements for activities that may cause impact.





## **ACKNOWLEDGMENTS**

Over the years, a number of researchers have conducted investigations of cultural resources within Waste Area Group 5 (WAG 5). Many were graduate students from Idaho State University. Gratitude is extended to these individuals as a group, as they are too numerous to list. Special thanks are due to the principal investigators, R. N. Holmer, S. J. Miller, and D. K. Yupe, who directed much of their work at WAG 5 over the years. Support for this summary and many of the more recent investigations within WAG 5 was provided by F. Webber and C. Hiaring of the Idaho National Engineering and Environmental Laboratory's (INEEL) Environmental Restoration department. Finally, the report would not have been completed without the general support and assistance of the INEEL Cultural Resource Management Office including J. B. Braun, D. L. Lowrey, C. F. Marler, T. L. Nelson, and D. Silvas.



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## ACRONYMS

ACHP	Advisory Council on Historic Preservation
ARA	Auxiliary Reactor Area or Army Reactor Area
BBWI	Bechtel BWXT Idaho, LLC
CFA	Central Facilities Area
CFR	<i>Code of Federal Regulations</i>
CRM	cultural resource management
DOE-ID	Department of Energy, Idaho Field Office
DOI	Department of Interior
IMACS	Intermountain Antiquities Computer System
INEEL	Idaho National Engineering and Environmental Laboratory
NPS	National Park Service
NRHP	National Register of Historic Places
PBF	Power Burst Facility
SHPO	State Historic Preservation Office
SPERT	Special Power Excursion Reactor Test
U.S.	United States
WAG 5	Waste Area Group 5



# **Cultural Resource Investigations for Waste Area Group 5 on the Idaho National Engineering and Environmental Laboratory**

## **1. INTRODUCTION**

The Idaho National Engineering and Environmental Laboratory (INEEL) is an 890 square mile multiprogram Department of Energy (DOE) laboratory in southeastern Idaho. Over the past 50 years, the laboratory has witnessed many significant scientific advances, particularly in the areas of nuclear propulsion, nuclear reactor safety and design, and waste management. As a result of this long history, various areas of the INEEL have potential and actual cleanup needs. To guide and ultimately expedite environmental restoration of contaminated areas, the INEEL is divided into ten "Waste Area Groups" (WAGs). The levels of cleanup and remediation, and schedules for the proposed environmental restoration within these WAGs will be determined by looking at projected future land uses in consultation with local regulators and stakeholders. In general, some areas may be remediated to risk levels associated with potential future agricultural or commercial uses, while other areas may be considered for permanent industrial use or long term access restriction.

Waste Area Group 5 (WAG 5) includes the Power Burst Facility (PBF) and a decommissioned research reactor area called the Auxiliary Reactor Area (ARA) (Figure 1-1). Potential contamination in WAG 5 is largely confined to tanks and components of wastewater disposal systems (e.g., evaporation ponds, percolation ponds, leach fields, pits, and dry wells). Surface and subsurface contaminants include radionuclides (cesium-137, cobalt-60, europium-152, europium-154, europium-155, americium-241, plutonium-239, plutonium-240, uranium-234, uranium-235, uranium-238, and strontium-90), metals (barium, beryllium, chromium, nickel, silver, and zinc), volatile organic compounds (1,1-dichloroethene, trichloroethene, tetrachloroethene, and toluene), semivolatile organic carbons (diethylphthalate), and polychlorinated biphenyls (DOE-ID 1996).

Cleanup activities within WAG 5 have been ongoing since 1993 and have included the removal of radioactively contaminated soils from a wastewater disposal pond, the removal of a contaminated sump, and the removal of contents from a contaminated septic system. In addition, a multi-layer engineered barrier was placed over the site of the Stationary Low-Power Reactor Number 1 and new fences were erected to prevent inadvertent exposure of the waste buried below. Most recently, contaminated soils have been removed from several areas at PBF and ARA. In general, the cleanup activities within WAG 5 have been designed to allow continued use as a permanent industrial area (DOE-ID 1996).

Cultural resource investigations within WAG 5 were initiated in the mid-1980s. The first projects were associated with an INEEL-wide effort to identify archaeological resources within and near major operating facilities. In the mid-1990s, a similar effort was initiated to identify historic properties within the built environment at the INEEL. These efforts are ongoing as are those which seek to identify Native American cultural resources. Throughout the years, surveys and archaeological investigations that have been directly linked to proposed ground disturbing activities, such as the cleanup work described above, have also been frequent and continue to this day.

All of the cultural resource investigations completed to date within WAG 5 have been tied directly to a variety of legal mandates that require federal agencies, like the Department of Energy, to assess the potential impacts of ground disturbing projects under their sponsorship. The following is an

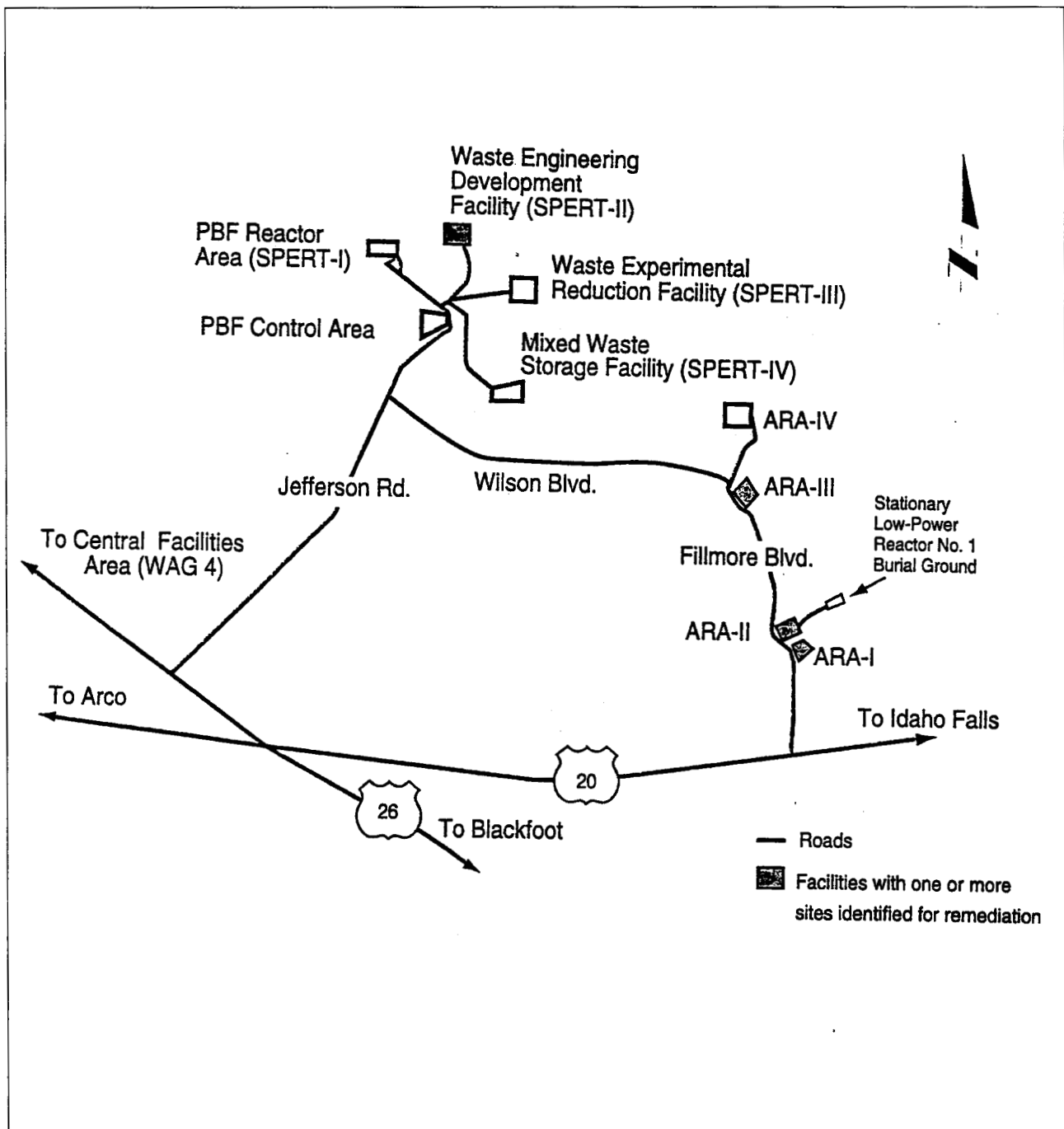


abbreviated list of laws and directives that mandate consideration of cultural resources in this process of assessment (see Miller 1995 for a summary):

- National Historic Preservation Act, 1966 (36 CFR 60-68, 800)
- National Environmental Policy Act, 1969 (40 CFR 1500-1508)
- Executive Order 11593, 1971
- Archaeological and Historic Preservation Act, 1974
- Archaeological Resources Protection Act, 1979
- U.S. Department of Energy Memorandum EH-231
- Native American Graves Protection and Repatriation Act, 1990
- Executive Order 13007, 1996

A wide variety of important cultural resources have been identified and preserved within WAG 5 as a result of these investigations. Archaeological surveys have revealed a multitude of campsites created by Native American hunter-gatherers over a period of time in excess of 12,000 years. The Shoshone-Bannock Tribes, whose aboriginal territories included the INEEL region, find many sites in this inventory to be of ancestral, traditional, and sacred importance. A variety of natural features are also significant to the Tribes. Many of the buildings that stand in isolated clusters within WAG 5 are historically significant as well and several are worthy of detailed documentation for inclusion in the permanent Historic American Engineering Record archives housed within the United States Library of Congress.

In the report to follow, all of the known cultural resources within WAG 5 will be described and the investigations that prompted their discovery will be summarized. Three main cultural resource types are discussed: archaeological resources, Native American cultural resources, and historic buildings and structures. The report concludes with a discussion of especially sensitive areas identified within WAG 5 data gaps, and recommendations for enhancing cultural resource protection and stewardship in the area.



**Figure 1-1.** General vicinity of WAG 5 on the INEEL.



## **2. WASTE AREA GROUP 5 SETTING**

The facilities that make up Waste Area Group 5 on the INEEL are located in the south-central portion of the facility. The unique natural and cultural features of the area are described below.

### **2.1 Natural Setting**

The INEEL is situated along the northwestern edge of the eastern Snake River Plain at an average elevation of about 4920 ft. The Lost River and Lemhi Ranges, and the mouths of the Big Lost River and Little Lost River Valleys bound the west and northwest portions of the facility complex. The southernmost tip of the Bitterroot Range and the wide mouth of the Birch Creek Valley form the northeastern boundary. The eastern and southern edges of the INEEL are contiguous with the sagebrush rangelands of the Snake River Plain but are punctuated by three predominant topographic features (Big Southern, Middle, and East Buttes), which dominate the horizon from any vantage point on the INEEL and served as important prehistoric and historic landmarks. Middle and East Buttes, also known locally and historically as the Twin Buttes, are within the INEEL boundary. Big Southern Butte, which rises nearly a thousand feet above the surrounding desert floor, is a short distance to the south.

While the buttes are the most conspicuous among the many reminders of the volcanic origin of the Snake River Plain, many smaller buttes and cinder cones also dot the landscape and lava outcrops, and lava tubes are common features of the rolling and broken terrain. Additional variation is provided by small seasonal playas which form in low areas where surface runoff collects. The jagged features of several more recent lava flows including the Cerro Grande flow which was formed nearly 13,000 years ago and intrudes into the southern portion of the facility, also add to the landscape.

Although volcanic features dominate much of the contemporary landscape of the INEEL, a substantial portion of the facility is contained within the Pioneer Basin. Prior to upstream irrigation demands, three major perennial streams drained into this closed basin: the Big Lost River, Little Lost River, and Birch Creek. All of these water courses terminate on or near the INEEL in natural wetland sink areas where all surface water either evaporates or infiltrates into the underground Snake River Plain aquifer.

The Big Lost River enters the southwestern corner of the INEEL and meanders some 31 miles across the facility before reaching a large sink area at the foot of the Lemhi Mountains. Due to upstream irrigation demands, the Big Lost now only conducts water during the wettest of years. Even so, extensive deposits of alluvial material and a myriad of abandoned stream channels and meander scars testify to higher water levels in the past, and it is likely that minimum year-round stream flows were maintained prior to modern changes upstream. Both Birch Creek and the Little Lost River approach the INEEL from the wide mountain valleys to the north of the facility. The Little Lost terminates in a small playa just north of the facility boundary and, in rare years, Birch Creek terminates in a large sink area that is contiguous with the Big Lost River Sink.

During most of the Holocene, the playas of the Lost Rivers and Birch Creek formed extensive wetlands that supported a diversity of plants and animals. Now, as a result of extensive upstream diversion, water flows into these areas only during years when precipitation is well above normal, so the wetlands are a mere shadow of what they probably once were. Even further back in time, during the wetter conditions of the Pleistocene, these sink areas were completely submerged by the shallow waters

of Lake Terretton, a large freshwater lake. The shoreline of this immense inland lake was roughly coincident with the 4800 ft contour and the shallow waters extended for many miles to the east.

Plant life on the INEEL is strongly influenced by topography and climate. This is cold desert country, characterized by large daily and seasonal temperature fluctuations and low precipitation rates. The average annual temperature is 42 degrees Fahrenheit and diurnal temperature fluctuations often exceed 20 degrees. Mean annual precipitation is only 9 inches and most of that falls as early spring rain. These conditions and the local topography support a range of vegetation communities including wetlands as you see here, shadscale steppe conditions in the old lakebed deposits, sagebrush-grassland communities across the Pioneer Basin and into the lava plains, and juniper-sagebrush woodlands located along the foothills of the buttes and nearby mountains. Although the boundaries of these general communities have migrated in response to available moisture, palynological data indicate their continued presence since the Late Pleistocene glacial periods.

The INEEL supports a faunal community generally typical of the Great Basin high desert and is home to some 239 resident and seasonal vertebrate species. Birds constitute the largest single class of wildlife in this census, although many of these are migratory, attracted to the area by the now seasonal wetlands of the Big Lost River and Birch Creek Sinks. Others, like sage grouse, are common all year. Small mammals (mice, rabbits, ground squirrels, marmots) are the most common year-round residents but big game animals, including antelope, elk, and deer are probably the most visible. Mammoth, camel and bison also once occupied the area. Predators, such as bobcat, coyote, and raptors, occur in typically modest numbers. The cool desert climate is also host to a surprisingly diverse aquatic community including at least six species of fish (e.g., trout, whitefish, and kokanee salmon) in the Lost Rivers and Birch Creek as well as a thriving community of water-loving birds, toads, tadpole shrimp, and other creatures that inhabit the playas and sinks.

Waste Area Group 5 facilities are situated within the lava flows that dominate the south-central portion of the INEEL, south and east of the Big Lost River floodplain. Sandy wind-blown soils have accumulated among the lava flows here, occasionally forming dune deposits. Many small playas where surface water accumulates on a seasonal basis are also present.

## **2.2 Cultural Setting**

Although the INEEL area may seem rather desolate and harsh to the casual viewer and it was certainly dreaded by early homesteaders, the rich archaeological record preserved there is testament to the importance of the region and its many resources to past hunting and gathering populations. In fact, there are an average of about 63 prehistoric archaeological sites per square mile across the INEEL and in some environmental zones, along permanent water for example, that figure jumps to 218 sites per square mile. These sites range in age from 150 – 12,000 years and almost all of them are classified as lithic scatters or short term camps, which is to say that all are roughly characterized by moderate to dense concentrations of lithic debris, projectile point fragments, and processing tools (scrapers, knives, general utility biface fragments). Many also contain domestic artifacts such as fire-cracked rock, burned bone, and some pottery, but ground stone tools are rare and almost always consist of implements that appear to have been used for pounding rather than grinding.

The cultural chronology for the INEEL region is broken into three major periods (Early, Middle, and Late) which are marked by major changes in weapons systems and in the morphology of the projectile point forms that were used. A fourth period, the Protohistoric, begins with the first appearance

of Euroamerican trade goods in archaeological assemblages that still reflect a primary reliance on traditional hunting and gathering practices. Figure 2-1 graphically summarizes these periods.

The earliest occupants of the INEEL region probably arrived during the Late Pleistocene some time around 12-13,000 years ago when Lake Terreteon was probably, at maximum extent, covering the entire north end of the INEEL and extending far to the east. These big game hunters employed a spear technology to bring down a variety of animals including mammoth, camel, and bison. Large lanceolate points of several varieties are the diagnostic time markers.

Around 7500 years ago, the large spear points characteristic of Pleistocene big game hunting were almost entirely replaced by smaller notched and stemmed forms. This transition probably represents the adoption of a spear throwing technology, which may have been more effective in exploiting newly evolved species of smaller and swifter-footed mammals that are common on or around the INEEL today. Projectile point forms from these contexts suggest that this was a time of some cultural reorganization and mobility in the INEEL region. The archaeological record reflects this in a proliferation of point styles, which appear to have correlates in surrounding regions. It appears that people from these places were moving in and out of the eastern Snake River Plain, perhaps in response to rapidly changeable environmental conditions. Pollen records support the idea of some environmental change, but also suggest that essentially modern conditions persisted throughout the entire period.

Small arrow points and pottery are the hallmarks of the Late Prehistoric period on the INEEL. Once again, influences from surrounding regions are seen in the point styles that are present. Modern environmental conditions prevailed throughout this period and subsistence strategies appear to have changed little. The nomadic hunting and gathering lifestyle of the Late Prehistoric period continued in southeastern Idaho even after the introduction of European trade goods and horses about 2-300 years ago. However, adoption of the horse by some groups at this time led to significant changes in aboriginal lifeways. Sites from this period, the Protohistoric, are very rare on the INEEL.

All of this prehistoric archaeology was probably created by small groups of seasonally mobile hunter-gatherers who were attracted to the area by the volcanic toolstone sources of Big Southern Butte and Lemhi Point, as well as the water and food resources of the Pioneer Basin (Big Lost River drainage) and the mountain valleys further to the north. As illustrated in Figure 2-1, archaeological evidence indicates that human populations have been engaging in these types of seasonal hunting and gathering activities within the INEEL area for a span of more than 12,000 years.

The INEEL region is part of the aboriginal homeland of the Shoshone-Bannock Tribes. Tribal members today view all of the prehistoric archaeological sites present on the INEEL as ancestral and of continuing traditional and sacred importance. Although rare on the INEEL, human burial sites are of special concern. In addition to archaeological remains, many natural features of the INEEL desert are also of significance to the Shoshone-Bannock people.

The Historic period in southeastern Idaho began with infrequent visits by explorers and fur trappers in the early 1800s. By the mid 1800s, some immigrants were moving through the INEEL area as they made their way to the Oregon Territory via Goodale's Cutoff, a northern spur of the Oregon Trail. In the 1860s, gold strikes in the Lost River Mountains drew many miners into the region and many stage and wagon routes were established. Small family farms appeared along the Big Lost River by 1880 and several large ranching operations were also established in what is now the northern portion of the INEEL. However, gross miscalculations of potential water flow led to the abandonment of most agricultural

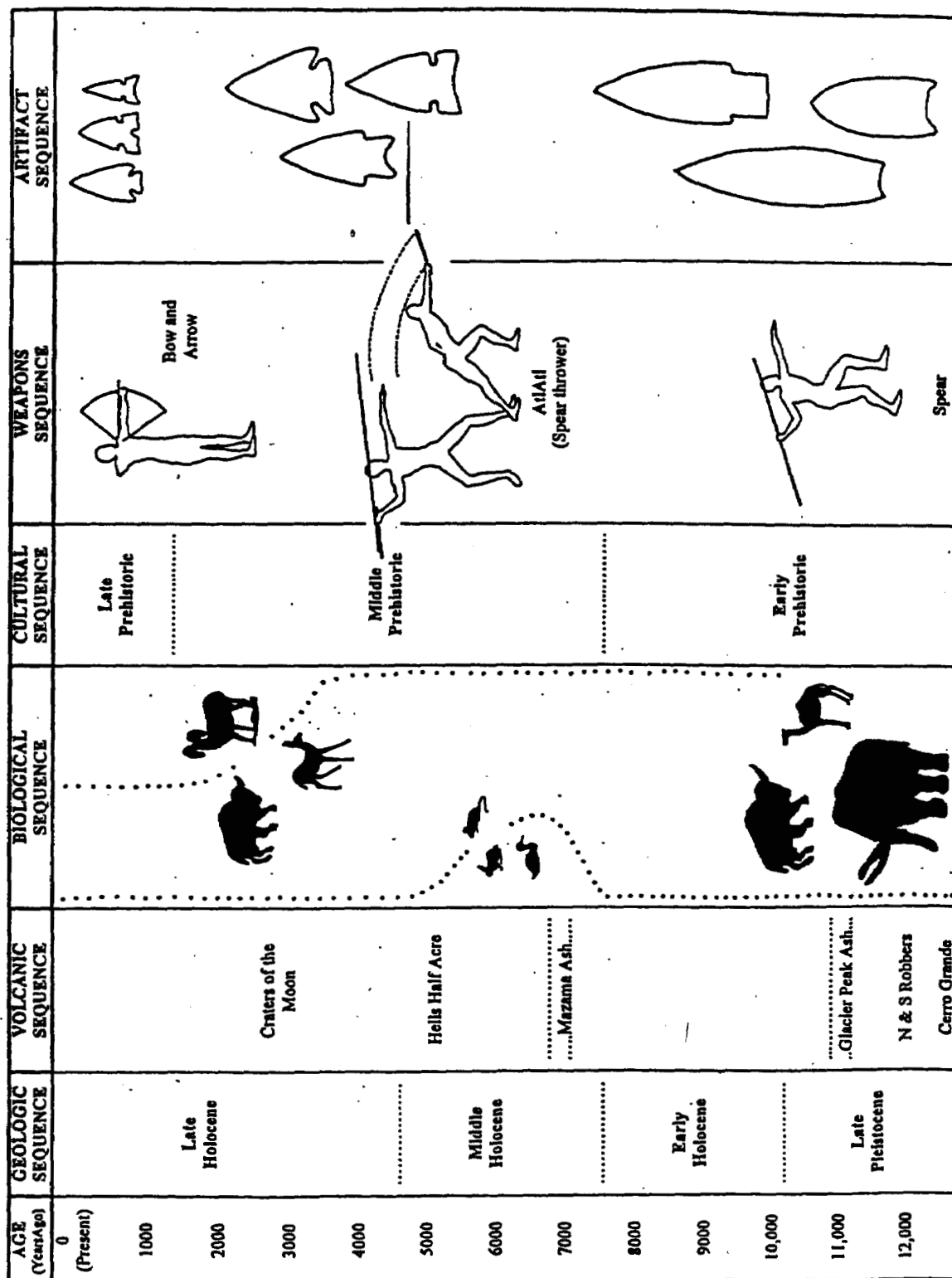


Figure 2-1. Cultural, geological, and ecological sequences of the INEEL region.

projects, even those that were federally sponsored. Since 1940, the INEEL area has been under the control of the U. S. government. Initially used during World War II as a test firing range, it was purchased by the Atomic Energy Commission (AEC) in 1959 and set aside for nuclear research. Many of the scientific facilities developed on the INEEL are historically important for their contribution to the overall development of U. S. nuclear science.

In general, early historic farmers (ca 1880 – 1930) did not enjoy the success of prehistoric hunter-gatherers in the INEEL region and the archaeological record of their occupation is relatively scanty in comparison to the prehistoric evidence. Even so, wagon trails and early roads criss-cross the area and an extensive system of canals and ditches and the campsites occupied during their construction are also common in archaeological inventories. Dilapidated homesteads and corrals occur less frequently but are quite numerous along the main channels of the Big Lost River where turn of the nineteenth century agricultural development of the area was focused. Finally, old railroad sidings represent small towns whose populations and services rose and fell, and ultimately came and went in response to the needs of local farmers and ranchers.

Most of these efforts were fairly short-lived, largely due to overestimates of available water and a failure to realize how porous the basalt bedrock really is; but the failure of these efforts actually opened the door for the Navy initially and later the AEC for development of what eventually became the INEEL. Federal interest in the INEEL area began in the 1940s when the Navy set aside a portion of the land area for the test firing of conventional weapons. Cultural resources representative of this period are mostly located at Central Facilities Area (CFA) and we actually have some of the only remaining World War II era structures in the state. In the late 1940s and early 1950s, the Atomic Energy Commission chose the INEEL area as a testing ground for its newly developing nuclear reactor program. Cultural resources from this era are largely focused on development of peaceful applications of nuclear power. In fact, from a historical perspective, it is safe to say that all of the commercial power reactors in the world have been influenced by experiments in safety and reactor design conducted at the INEEL by 52 unique reactors built over the past 50 years. Significant contributions to more recent nuclear history have also been made in the area of nuclear propulsion.





### 3. WASTE AREA GROUP 5 CULTURAL RESOURCE INVESTIGATIONS

Many cultural resource investigations have been completed in the WAG 5 area. Activities have included archaeological surveys (cf. Reed et al. 1987) and test excavations (Ringe 1988), excavations of sensitive Native American burial sites (Miller 1994, 1997), historic building inventories (Arrowrock Group, Inc. 1997), and detailed Historic American Engineering Record documentation (DOE-ID 1993, Stacey 1998). Table 3-1 below provides a summary of all projects completed to date. Figure 3-1, which follows the table shows the extent of archaeological survey coverage in the area.

**Table 3-1.** Summary of cultural resource investigations in WAG 5.

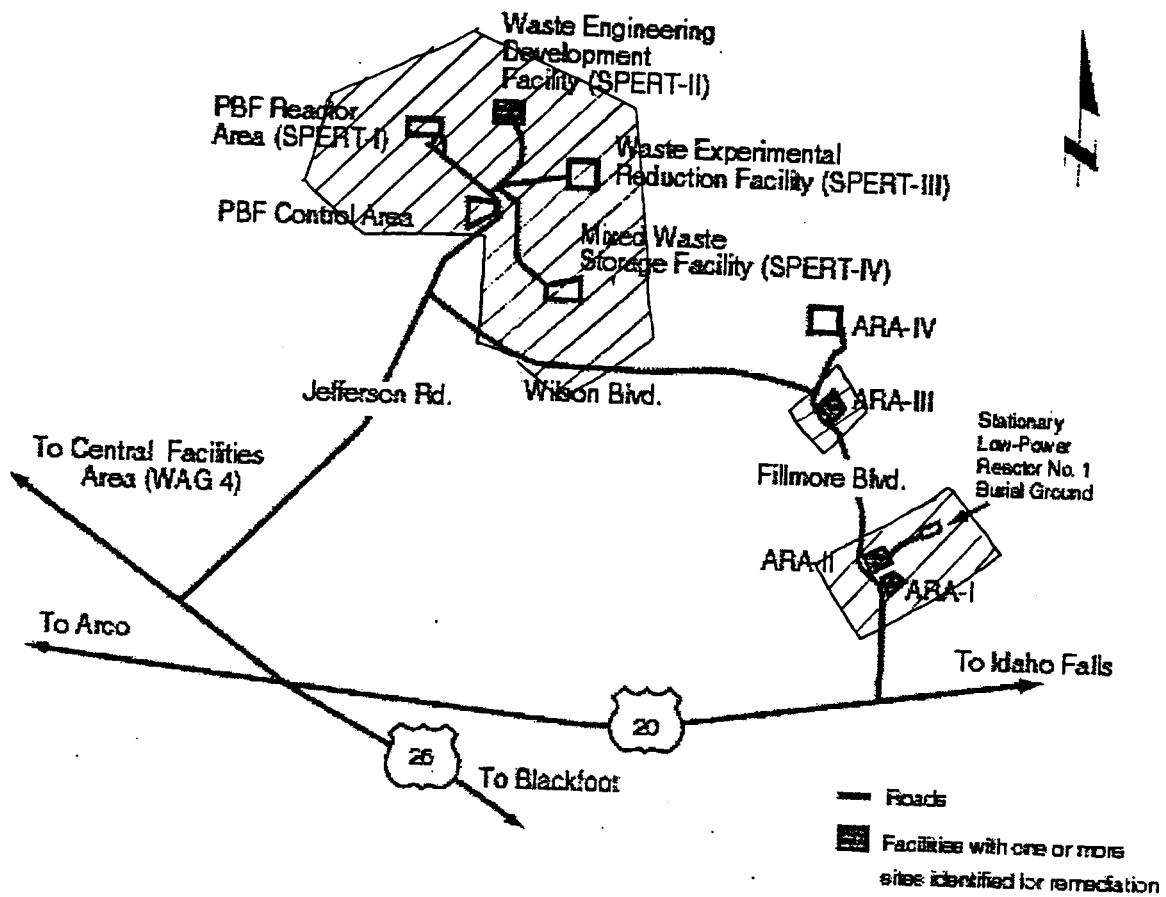
Project Number	Project Name	Project Date	Project Type	Number of Cultural Resources	Reference
SJM-84-20	PBF Ditch/Pond	August 1984	6-acre survey	0 cultural resources	Miller 1985:I.6
ISU-84-2	WERF Perimeter	November 1984	25-acre survey	4 cultural resources	Reed et al. 1987:266
ISU-85-11.6	PBF Administrative Area	August 1985	1133-acre survey	84 cultural resources	Reed et al. 1987:266
ISU-85-11.85	135 kV line survey	August 1985	14 mile total survey (~ 1 mile in PBF area)	4 cultural resources in WAG 5 area	Reed et al. 1987:429
ISU-85-11.91	T-24 Road	August 1985	15 mile total survey (~1 mile in PBF area)	3 cultural resources in WAG 5 area	Reed et al. 1987: 461
ISU-88-6	135 kV line test excavations	August 1988	test excavations	5 cultural resources in WAG 5	Ringe 1988
EGG-91-02	SPERT III Building and Sewer	January 1991	archive review	0 cultural resources	Lowrey 1991, Lowrey 1992
EGG-93-04	ARA D&D	August 1993	HAER documentation	Entire ARA complex	Stacey 1998
EGG-93-13	PBF Corrosive Waste Sump and Pond	December 1992	archive review	0 cultural resources	INEEL CRM Files EGG-93-13

**Table 3-1.** (continued).

EGG-93-22	PBF Communications Upgrade	April 1993	< 1-acre survey	0 cultural resources	Ringe 1993a
EGG-93-31	Explosives Disposal Area Near ARA IV	June 1993	< 1-acre survey	0 cultural resources	INEEL CRM Files EGG-93-31
EGG-94-06	ARA Monitoring Wells	November 1993	1-acre survey	0 cultural resources	Ringe 1993b
EGG-94-24	PBF Human Remains	April 1994	excavation	1 cultural resource	Miller 1994
EGG-94-28	Warning Sign Near ARA IV	May 1994	archive review	0 cultural resources	INEEL CRM Files EGG-94-28
EGG-94-32	Soil Removal at ARA II	June 1994	< 1-acre survey	0 cultural resources	INEEL CRM Files EGG-94-32
EGG-94-37	SL-1 Soil Cap	July 1994	archive review	0 cultural resources	INEEL CRM Files EGG-94-37
EGG-94-46	Portable Water Treatment Units at PBF	November 1994	archive review	0 cultural resources	Ringe 1994
EGG-94-51	MWSF Storage Pad and Access Upgrade at PBF	August 1994	archive review	0 cultural resources	INEEL CRM Files EGG-94-51
LITCO-95-14	Local Area Network Upgrade	March 1995	<1-acre survey	0 cultural resources	INEEL CRM Files LITCO-95-14
LITCO-95-17	WERF Drainage Basin Enlargement	February 1995	archive review	0 cultural resources	INEEL CRM Files LITCO-95-17
LITCO-95-22	Monitoring Wells at PBF	February 1995	archive review	0 cultural resources	INEEL CRM Files LITCO-95-22
LITCO-95-40	Evaporation Pond	May 1995	archive review	0 cultural resources	INEEL CRM Files LITCO-95-40

**Table 3-1.** (continued).

LMIT-96-27	WERF Human Remains	May 1996	test excavation	1 cultural resource	Miller 1997
LMIT-96-41	CFA and PBF Substation Upgrades	June 1996	archive review	0 cultural resources	INEEL CRM Files LMIT-96-41
LMIT-97-17	PBF Local Area Network Upgrade	March 1997	archive review	0 cultural resources	INEEL CRM Files LMIT-97-17
LMIT-97-20	PBF Wells near PBF-612 and PBF-601	March 1997	archive review	0 cultural resources	INEEL CRM Files LMIT-97-20
LMIT-97-24	ARA-16 Tank Testing	April 1997	archive review	0 cultural resources	INEEL CRM Files LMIT-97-24
LMIT-97-40	ARA Soil Sampling	July 1997	20-acre survey	2 cultural resources	Pace 1998
LMIT-97-51	PBF Rock Probes	August 1997	archive review	0 cultural resources	INEEL CRM Files LMIT-97-51
LMIT-97-56	Historic Building Inventory	September 1997	INEEL-wide building survey	27 buildings at PBF complex, multiple buildings at the ARA complex	Arrowrock 1997
LMIT-98-31	ARA/PBF Environmental Restoration	September 1998	230-acre survey	11 cultural resources	Pace 1998
LMIT-99-43	PBF Asphalt Repair	September 1999	archive review	0 cultural resources	INEEL CRM Files LMIT-99-43
LMIT-99-44	PBF Drainfield Enlargement	September 1999	archive review	0 cultural resources	INEEL CRM Files LMIT-99-44
BBWI-2000-01	ARA-INTEC Haul Road	November 1999	93-acre survey	7 cultural resources	Pace 2000



**Figure 3-1.** Archaeological survey coverage within WAG 5.

### 3.1 Known Cultural Resource Inventory

Previous investigations have demonstrated that cultural resources of many types are common within Waste Area Group 5. Prehistoric archaeological sites and areas of significance to the Shoshone-Bannock Tribes are especially numerous and sensitive. Less numerous but more visible are the recent historic buildings and structures of the area. Table 3-2 below provides a summary of all cultural resources recorded in WAG 5 to date. Appendix A contains a map showing the locations of all identified archaeological sites within WAG 5. Because the location information included in the appendix is distributed for Official Use Only, it may not be included in all versions of this report.

**Table 3-2.** Summary of cultural resources recorded in WAG 5.

Site or Building Number	Project	Site Type	Artifact Inventory or Historic Context	Site Age or Year Built	National Register Eligibility
10-BT-1009	ISU-85-11.91: T-24 Road	Lithic Scatter	Flakes, two scrapers	General Prehistoric	Potentially Eligible
10-BT-1011	ISU-85-11.91: T-24 Road and ISU-88-6: 135kV testing	Lithic Scatter	Flakes, large notched point fragment, two biface fragments	Middle Prehistoric	Potentially Eligible
10-BT-1012	ISU-85-11.91: T-24 Road	Lithic Scatter	Flakes, large notched point fragment	General Prehistoric	Potentially Eligible
10-BT-1039	ISU-84-2: WERF	Lithic Scatter	Flakes, biface fragment	General Prehistoric	Potentially Eligible
10-BT-1040	ISU-84-2: WERF	Isolated Find	Four flakes	General Prehistoric	Not Eligible
10-BT-1041	ISU-84-2: WERF	Lithic Scatter	Flakes, two large notched point fragments	Middle Prehistoric	Potentially Eligible
10-BT-1042	ISU-84-2: WERF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1043	ISU-85-11.85: 135kV survey and ISU-88-6: 135kV testing	Campsite	Flakes, two large notched point fragments, fire-cracked rock, hearth feature	1350 $\pm$ 70 BP (Middle Prehistoric III)	Potentially Eligible
10-BT-1044	ISU-85-11.85: 135kV survey and ISU-88-6: 135kV testing	Campsite	Flakes, two utilized flakes, burned bone, fire-cracked rock	General Prehistoric	Potentially Eligible

**Table 3-2.** (continued).

10-BT-1045	ISU-85-11.85: 135kV survey and ISU-88-6: 135kV testing	Lithic Scatter	Flakes	General Prehistoric	Potentially Eligible
10-BT-1046	ISU-85-11.85: 135kV survey and ISU-88-6: 135kV testing	Lithic Scatter	Flakes	General Prehistoric	Potentially Eligible
10-BT-1162	ISU-85-11.6: PBF	Isolated Find	Large Stemmed point fragment	Early Prehistoric II	Not Eligible
10-BT-1220	ISU-85-11.6: PBF	Isolated Find	Two Elko points	Middle Prehistoric III	Not Eligible
10-BT-1223	ISU-85-11.6: PBF	Lithic Scatter	Flakes, two Stemmed- Indented Base points, four biface fragments	Middle Prehistoric II	Potentially Eligible
10-BT-1160	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Rosegate point, drill, large notched point, two biface fragments, utilized flake	Late Prehistoric I, Middle Prehistoric	Potentially Eligible
10-BT-1161	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Rosegate point, scraper, four biface fragments, three utilized flakes	Late Prehistoric I	Potentially Eligible
10-BT-1221	ISU-85-11.6: PBF	Lithic Scatter	Flakes, two biface fragments, two utilized flakes	General Prehistoric	Potentially Eligible
10-BT-1215	ISU-85-11.6: PBF	Lithic Scatter	Flakes, small notched point, scraper, biface fragment, utilized flake	Late Prehistoric	Potentially Eligible
10-BT-1210	ISU-85-11.6: PBF	Isolated Find	Flakes	General Prehistoric	Not Eligible
10-BT-1211	ISU-85-11.6: PBF	Campsite	Flakes, Rosegate point, fire- cracked rock, three biface fragments, utilized flake	Late Prehistoric I	Potentially Eligible
10-BT-1212	ISU-85-11.6: PBF	Campsite	Flakes, Bitterroot point, five Elko points, Rosegate point, preform, three hearth features, midden feature	Middle Prehistoric I and III, Late Prehistoric I	Potentially Eligible

**Table 3-2.** (continued).

10-BT-1209	ISU-85-11.6: PBF	Campsite	Flakes, Rosegate point, burned bone	Late Prehistoric I	Potentially Eligible
10-BT-1207	ISU-85-11.6: PBF	Campsite	Flakes, burned bone	General Prehistoric	Potentially Eligible
10-BT-1206	ISU-85-11.6: PBF	Isolated Find	Flakes, retouched flake	General Prehistoric	Not Eligible
10-BT-1204	ISU-85-11.6: PBF	Isolated Find	Flakes	General Prehistoric	Not Eligible
10-BT-1158	ISU-85-11.6: PBF	Isolated Find	Elko point	General Prehistoric	Not Eligible
10-BT-1167	ISU-85-11.6: PBF	Lithic Scatter	Flakes, large notched point, scraper, biface fragment	Middle Prehistoric	Potentially Eligible
10-BT-1174	ISU-85-11.6: PBF	Lithic Scatter	Flakes	General Prehistoric	Potentially Eligible
10-BT-1168	ISU-85-11.6: PBF	Isolated Find	Desert point	Late Prehistoric II	Not Eligible
10-BT-1169	ISU-85-11.6: PBF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1176	ISU-85-11.6: PBF	Isolated Find	Scraper	General Prehistoric	Not Eligible
10-BT-1163	ISU-85-11.6: PBF	Isolated Find	Bitterroot point	Middle Prehistoric I	Not Eligible
10-BT-1145	ISU-85-11.6: PBF	Campsite	Flakes, burned bone	General Prehistoric	Potentially Eligible
10-BT-1147	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Eastgate point, two biface fragments, retouched flake	Late Prehistoric I	Potentially Eligible
10-BT-1148	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Elko point, two biface fragments	Middle Prehistoric III	Potentially Eligible
10-BT-1142	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Eastgate point, scraper	Late Prehistoric I	Potentially Eligible
10-BT-1146	ISU-85-11.6: PBF	Lithic Scatter	Flakes, knife	General Prehistoric	Potentially Eligible



**Table 3-2.** (continued).

10-BT-1144	ISU-85-11.6: PBF	Isolated Find	Retouched flake	General Prehistoric	Not Eligible
10-BT-1141	ISU-85-11.6: PBF	Lithic Scatter	Flakes, three biface fragments	General Prehistoric	Potentially Eligible
10-BT-1143	ISU-85-11.6: PBF	Rock Feature	Flakes, rock circle/hunting blind	General Prehistoric	Potentially Eligible
10-BT-1127	ISU-85-11.6: PBF	Isolated Find	Two biface fragments	General Prehistoric	Not Eligible
10-BT-1126	ISU-85-11.6: PBF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1140	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Desert Sierra point, scraper, biface fragment	Late Prehistoric II	Potentially Eligible
10-BT-1139	ISU-85-11.6: PBF	Campsite	Flakes, burned bone	General Prehistoric	Potentially Eligible
10-BT-1138	ISU-85-11.6: PBF	Isolated Find	Flakes, Elko point	Middle Prehistoric III	Not Eligible
10-BT-1135	ISU-85-11.6: PBF	Campsite	Flakes, biface fragment, burned bone	General Prehistoric	Potentially Eligible
10-BT-1125	ISU-85-11.6: PBF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1137	ISU-85-11.6: PBF	Lithic Scatter	Flakes, biface fragment	General Prehistoric	Potentially Eligible
10-BT-1136	ISU-85-11.6: PBF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1123	ISU-85-11.6: PBF	Campsite	Flakes, three Elko points, Avonlea point, Desert point, two scrapers, five biface fragments, four utilized flakes, burned bone, two hearth features	Middle Prehistoric III, Late Prehistoric I and II	Potentially Eligible
10-BT-1122	ISU-85-11.6: PBF	Lithic Scatter	Flakes, biface fragment, utilized flake	General Prehistoric	Potentially Eligible
10-BT-1134	ISU-85-11.6: PBF	Lithic Scatter	Flakes	General Prehistoric	Potentially Eligible

**Table 3-2.** (continued).

10-BT-1124	ISU-85-11.6: PBF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1130	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Elko point	Middle Prehistoric III	Potentially Eligible
10-BT-1129	ISU-85-11.6: PBF	Lithic Scatter	Flakes, scraper, biface fragment	General Prehistoric	Potentially Eligible
10-BT-1181	ISU-85-11.6: PBF	Lithic Scatter	Flakes, core	General Prehistoric	Potentially Eligible
10-BT-1180	ISU-85-11.6: PBF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1179	ISU-85-11.6: PBF	Isolated Find	Elko point	Middle Prehistoric III	Not Eligible
10-BT-1164	ISU-85-11.6: PBF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1172	ISU-85-11.6: PBF	Campsite	Flakes, Elko point, Stemmed-Indented Base point, two stemmed dart points, scraper, three biface fragments, utilized flake, burned bone, two hearth features	Middle Prehistoric II and III	Potentially Eligible
10-BT-1165	ISU-85-11.6: PBF	Isolated Find	Flakes, biface fragment	General Prehistoric	Not Eligible
10-BT-1178	ISU-85-11.6: PBF	Isolated Find	Large notched point	Middle Prehistoric	Not Eligible
10-BT-1224	ISU-85-11.6: PBF	Lithic Scatter	Flakes, five biface fragments	General Prehistoric	Potentially Eligible
10-BT-1225	ISU-85-11.6: PBF	Lithic Scatter	Flakes, utilized flake	General Prehistoric	Potentially Eligible
10-BT-1213	ISU-85-11.6: PBF	Isolated Find	Flakes, Elko point	Middle Prehistoric III	Not Eligible
10-BT-1218	ISU-85-11.6: PBF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1219	ISU-85-11.6: PBF	Isolated Find	Elko point	Middle Prehistoric III	Not Eligible

**Table 3-2.** (continued).

10-BT-1217	ISU-85-11.6: PBF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1222	ISU-85-11.6: PBF	Lithic Scatter	Flakes, three utilized flakes	General Prehistoric	Potentially Eligible
10-BT-1121	ISU-85-11.6: PBF	Isolated Find	Elko point	Middle Prehistoric I	Not Eligible
10-BT-1214	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Rosegate point, biface fragment	Late Prehistoric I	Potentially Eligible
10-BT-1216	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Elko point, three biface fragments	Middle Prehistoric III	Potentially Eligible
10-BT-1208	ISU-85-11.6: PBF	Lithic Scatter	Flakes, large notched point, drill, biface fragment	Middle Prehistoric	Potentially Eligible
10-BT-1205	ISU-85-11.6: PBF	Lithic Scatter	Flakes, two Elko points, Rosegate point, biface fragment	Middle Prehistoric III, Late Prehistoric I	Potentially Eligible
10-BT-1166	ISU-85-11.6: PBF	Campsite	Flakes, Biface fragment, utilized and retouched flakes, burned bone	General Prehistoric	Potentially Eligible
10-BT-1170	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Elko point, four biface fragments, two utilized flakes	Middle Prehistoric III	Potentially Eligible
10-BT-1173	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Stemmed-Indented Base point, drill, five biface fragments, utilized flake	Middle Prehistoric II	Potentially Eligible
10-BT-1171	ISU-85-11.6: PBF	Campsite	Flakes, Elko point, Rosegate Point, two Eastgate points, Desert point, three abraders, scraper, two biface fragments, hearth feature	Middle Prehistoric III, Late Prehistoric I and II	Potentially Eligible
10-BT-1175	ISU-85-11.6: PBF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1177	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Stemmed-Indented Base point, preform, utilized flake	Middle Prehistoric II	Potentially Eligible

**Table 3-2.** (continued).

10-BT-1132	ISU-85-11.6: PBF	Isolated Find	Elko Point	Middle Prehistoric III	Not Eligible
10-BT-1133	ISU-85-11.6: PBF	Lithic Scatter	Flakes	General Prehistoric	Potentially Eligible
10-BT-1182	ISU-85-11.6: PBF	Isolated Find	Stemmed dart fragment	Middle Prehistoric	Not Eligible
10-BT-1131	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Rosegate point	Late Prehistoric I	Potentially Eligible
10-BT-1128	ISU-85-11.6: PBF	Lithic Scatter	Flakes, scraper	General Prehistoric	Potentially Eligible
10-BT-1155	ISU-85-11.6: PBF	Isolated Find	Bitterroot point	Middle Prehistoric I	Not Eligible
10-BT-1183	ISU-85-11.6: PBF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1157	ISU-85-11.6: PBF	Campsite	Flakes, Avonlea point, two Desert points, small notched point, pottery, biface fragment	Late Prehistoric I and II	Potentially Eligible
10-BT-1156	ISU-85-11.6: PBF	Lithic Scatter	Flakes, scraper, four biface fragments	General Prehistoric	Potentially Eligible
10-BT-1149	ISU-85-11.6: PBF	Lithic Scatter	Flakes, utilized flakes	General Prehistoric	Potentially Eligible
10-BT-1150	ISU-85-11.6: PBF	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
10-BT-1151	ISU-85-11.6: PBF	Isolated Find	Stemmed-Indented Base point, large notched point	Middle Prehistoric II	Not Eligible
10-BT-1152	ISU-85-11.6: PBF	Lithic Scatter	Flakes, Stemmed-Indented Base point, Elko point, biface fragment	Middle Prehistoric II and III	Potentially Eligible
10-BT-1153	ISU-85-11.6: PBF	Isolated Find	Flake, Bitterroot point	Middle Prehistoric I	Not Eligible
10-BT-1154	ISU-85-11.6: PBF	Isolated Find	Elko point	Middle Prehistoric III	Not Eligible

**Table 3-2.** (continued).

10-BT-1991	EGG-94-24: PBF	Human Remains in secondary context	Human bones, historic trash (wire, wood, plastic), 55 lithic flakes	1254±45 years BP (Late Prehistoric II)	Potentially Eligible
10-BT-2046	EGG-96-27: WERF	Human Remains in primary context	Human bones	General Prehistoric	Potentially Eligible
97-40-01	LMIT-97-40: ARA	Lithic Scatter	Flakes, two large notched points, biface fragment, utilized flake	Middle Prehistoric	Potentially Eligible
97-40-02	LMIT-97-40: ARA	Campsite	Flakes, Bitterroot point, large notched point, two small notched points, preform, scraper, two biface fragments, two utilized flakes, burned bone, fire-cracked rock	Middle Prehistoric I and Late Prehistoric	Potentially Eligible
98-31-01	LMIT-98-31: ARA	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
98-31-02	LMIT-98-31: ARA	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
98-31-03	LMIT-98-31: ARA	Isolated Find	Scraper	General Prehistoric	Not Eligible
98-31-04	LMIT-98-31: ARA	Isolated Find	Flake, large notched point	Middle Prehistoric	Not Eligible
98-31-05	LMIT-98-31: ARA	Isolated Find	Flake	General Prehistoric	Not Eligible
98-31-06	LMIT-98-31: ARA	Isolated Find	Stemmed-Indented Base point	Middle Prehistoric II	Not Eligible
98-31-07	LMIT-98-31: ARA	Isolated Find	Large notched point	Middle Prehistoric	Not Eligible
98-31-08	LMIT-98-31: ARA	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
98-31-09	LMIT-98-31: ARA	Isolated Find	Elko point	Middle Prehistoric III	Not Eligible

**Table 3-2.** (continued).

98-31-10	LMIT-98-31-ARA	Isolated Find	Flakes	General Prehistoric	Not Eligible
98-31-11	LMIT-98-31: ARA	Cave	No artifacts apparent at surface, subsurface unexplored	General Prehistoric	Potentially Eligible
2000-01-01	BBWI-2000-01: ARA to INTEC Haul Road	Campsite	Flakes, biface fragment, burned bone	General Prehistoric	Potentially Eligible
2000-01-02	BBWI-2000-01: ARA to INTEC Haul Road	Lithic Scatter	Flakes, Cottonwood point	Late Prehistoric II	Potentially Eligible
2000-01-03	BBWI-2000-01: ARA to INTEC Haul Road	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
2000-01-04	BBWI-2000-01: ARA to INTEC Haul Road	Campsite	Flakes, large notched point, hearth or oven feature	Middle Prehistoric	Potentially Eligible
2000-01-05	BBWI-2000-01: ARA to INTEC Haul Road	Lithic Scatter	Flakes, two utilized flakes	General Prehistoric	Potentially Eligible
2000-01-06	BBWI-2000-01: ARA to INTEC Haul Road	Isolated Find	Flakes, utilized flake	General Prehistoric	Not Eligible
2000-01-07	BBWI-2000-01: ARA to INTEC Haul Road	Lithic Scatter	Flakes	General Prehistoric	Potentially Eligible
2000-01-08	BBWI-2000-01: ARA to INTEC Haul Road	Isolated Find	Biface fragment	General Prehistoric	Not Eligible
2000-01-09	BBWI-2000-01: ARA to INTEC Haul Road	Campsite	Flakes, Desert point, fire-cracked rock, schistose quartzite	Late Prehistoric II	Potentially Eligible
10-BT-1698	EGG-90-09: NPR to ICPP Access Road and BBWI-2000-01: ARA to INTEC Haul Road	Lithic Scatter	Flakes, two lanceolate points, one Elko point, knife, graver, four scrapers, eight biface fragments	Early Prehistoric, Middle Prehistoric III	Potentially Eligible

**Table 3-2.** (continued).

ARA Complex	EGG-90-04: ARA D&D	ARA Complex	Multiple buildings and structures significant for association with Cold War military applications of nuclear technology	1957 – 1965	Eligible, mitigation complete
PER-601	LMIT-97-56: Historic Building Inventory	PBF Complex	Reactor Control Building, Test Support Building, Offices significant for association with commercial reactor safety tests	1955	Eligible, mitigation complete
PER-602	LMIT-97-56: Historic Building Inventory	PBF Complex	Pumphouse significant for association with commercial reactor safety tests	1955	Eligible, mitigation complete
PER-604	LMIT-97-56: Historic Building Inventory	PBF Complex	Reactor Building, Test Support Building significant for association with commercial reactor safety tests	1955	Eligible, mitigation complete
PER-606	LMIT-97-56: Historic Building Inventory	PBF Complex	Test Support Building, Instrument Cell significant for association with commercial reactor safety tests	1956	Eligible
PER-608	LMIT-97-56: Historic Building Inventory	PBF Complex	Substation Control House significant for association with commercial reactor safety tests	1957	Eligible, mitigation complete
PER-609	LMIT-97-56: Historic Building Inventory	PBF Complex	SPERT III Reactor Building significant for association with commercial reactor safety tests	1957	Eligible
PER-612	LMIT-97-56: Historic Building Inventory	PBF Complex	SPERT II Reactor Building significant for association with commercial reactor safety tests	1959	Eligible
PER-613	LMIT-97-56: Historic Building Inventory	PBF Complex	SPERT IV Reactor Building significant for association with commercial reactor safety tests	1960	Eligible

**Table 3-2.** (continued).

PER-614	LMIT-97-56: Historic Building Inventory	PBF Complex	Pumphouse significant for association with commercial reactor safety tests	1960	Eligible, mitigation complete
PER-616	LMIT-97-56: Historic Building Inventory	PBF Complex	Storage Building significant for association with commercial reactor safety tests	1967	Eligible, mitigation complete
PER-617	LMIT-97-56: Historic Building Inventory	PBF Complex	Storage Building significant for association with commercial reactor safety tests	1962	Eligible, mitigation complete
PER-619	LMIT-97-56: Historic Building Inventory	PBF Complex	Reactor Control Building significant for association with commercial reactor safety tests	1955	Eligible
PER-620	LMIT-97-56: Historic Building Inventory	PBF Complex	Power Burst Facility Reactor Building significant for association with commercial reactor safety tests	1966	Eligible
PER-621	LMIT-97-56: Historic Building Inventory	PBF Complex	Emergency Generator Building significant for association with commercial reactor safety tests	1958	Eligible, mitigation complete
PER-625	LMIT-97-56: Historic Building Inventory	PBF Complex	Maintenance and Storage Building significant for association with commercial reactor safety tests	1966	Eligible, mitigation complete
PER-627	LMIT-97-56: Historic Building Inventory	PBF Complex	Gas Cylinder Storage Building significant for association with commercial reactor safety tests	1966	Eligible, mitigation complete

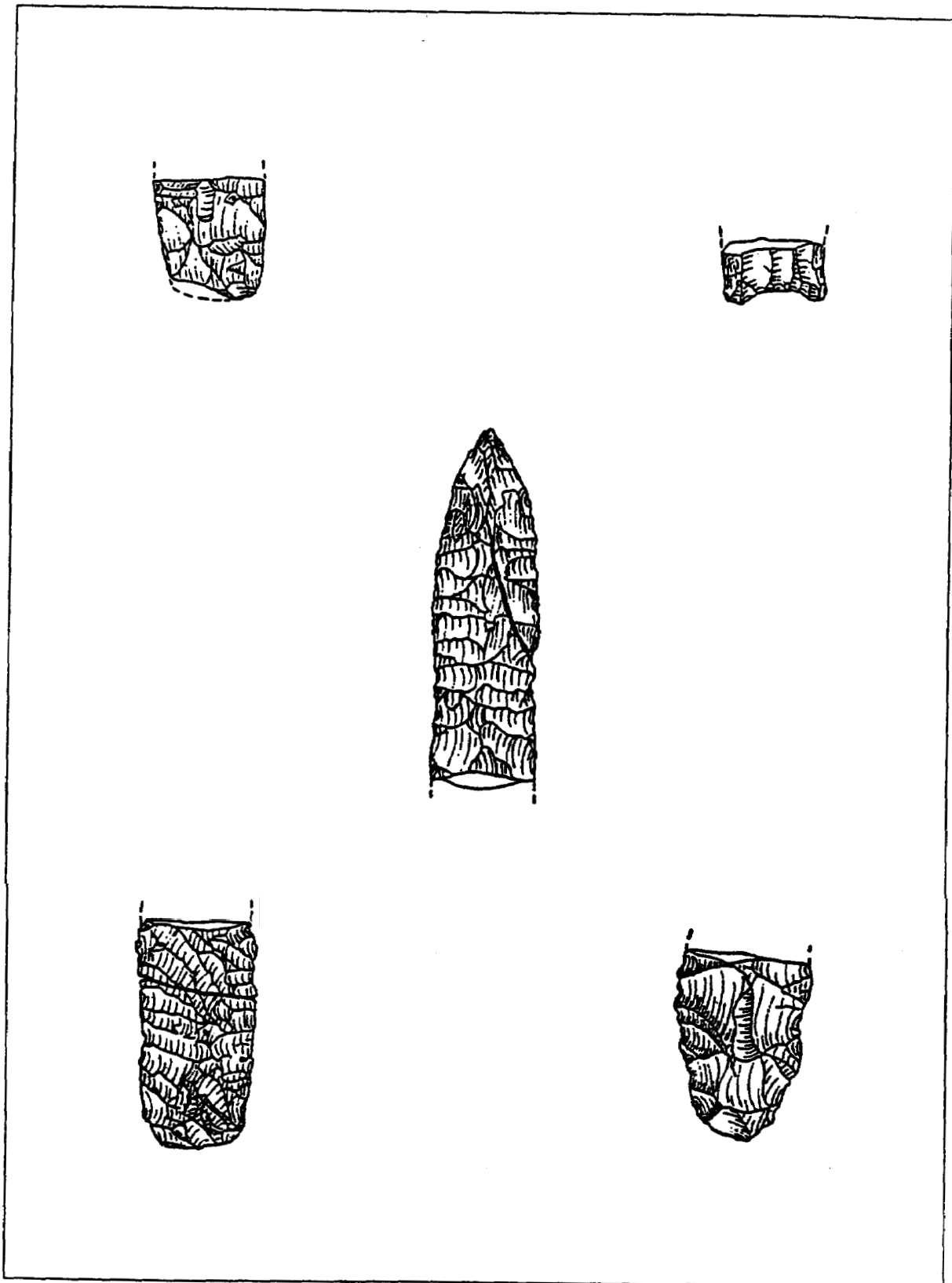


### **3.1.1 Archaeological and Native American Sites Summary**

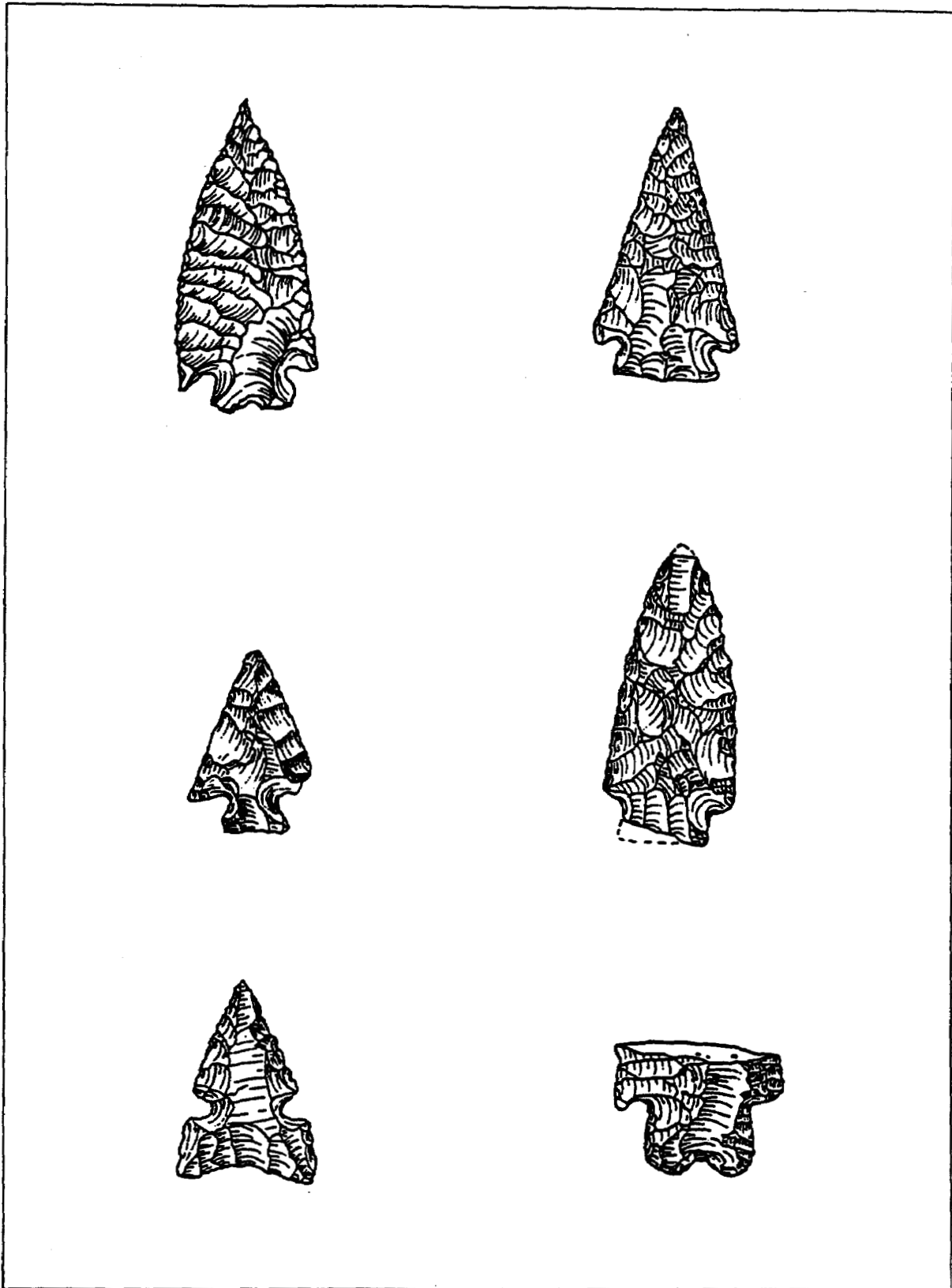
Since 1984, six major archaeological survey projects encompassing nearly 1200 acres have been completed in the PBF area. As a result, 86 sensitive resources have been identified within the fenced perimeter of the facility or immediately adjacent to it. Resources include hunting campsites and game processing areas, and stone tool processing areas from all major periods of human occupation represented at the INEEL. Figures 3-2 through 3-5 illustrate some artifacts typical of these sites. The PBF area also includes a rock feature made of locally available basalt cobbles (Figure 3-6). The topographic situation and basic structure of this feature suggests that it probably functioned as a hunting blind. A number of resources important and sacred to the Shoshone-Bannock Tribes are also known within the boundaries of the PBF complex. In fact, it is the only INEEL facility known to contain Native American burial sites and is extremely sensitive as a result. Shoshone-Bannock tribal members have also indicated that the sandy ridges and basins so common to this portion of the INEEL may contain additional areas of traditional cultural importance. Limited archaeological test excavations completed in 1988 and intensive emergency investigations of inadvertently discovered Native American human remains in 1994 and again in 1996 provide further evidence of the sensitivity of the area and indicate a high potential for stratified subsurface cultural deposits.

At the ARA complex, archaeological investigations began in the early 1990s when environmental restoration activities were initiated. Beginning in 1994, the INEEL Cultural Resource Management (CRM) Office completed a variety of small surveys for monitoring wells, warning signs, new fences, etc. (Miller 1995). In 1997 and 1998, survey coverage was significantly expanded during examination of 229 acres around the main facility operation centers; 15 archaeological resources were documented in this area (Pace 2000).

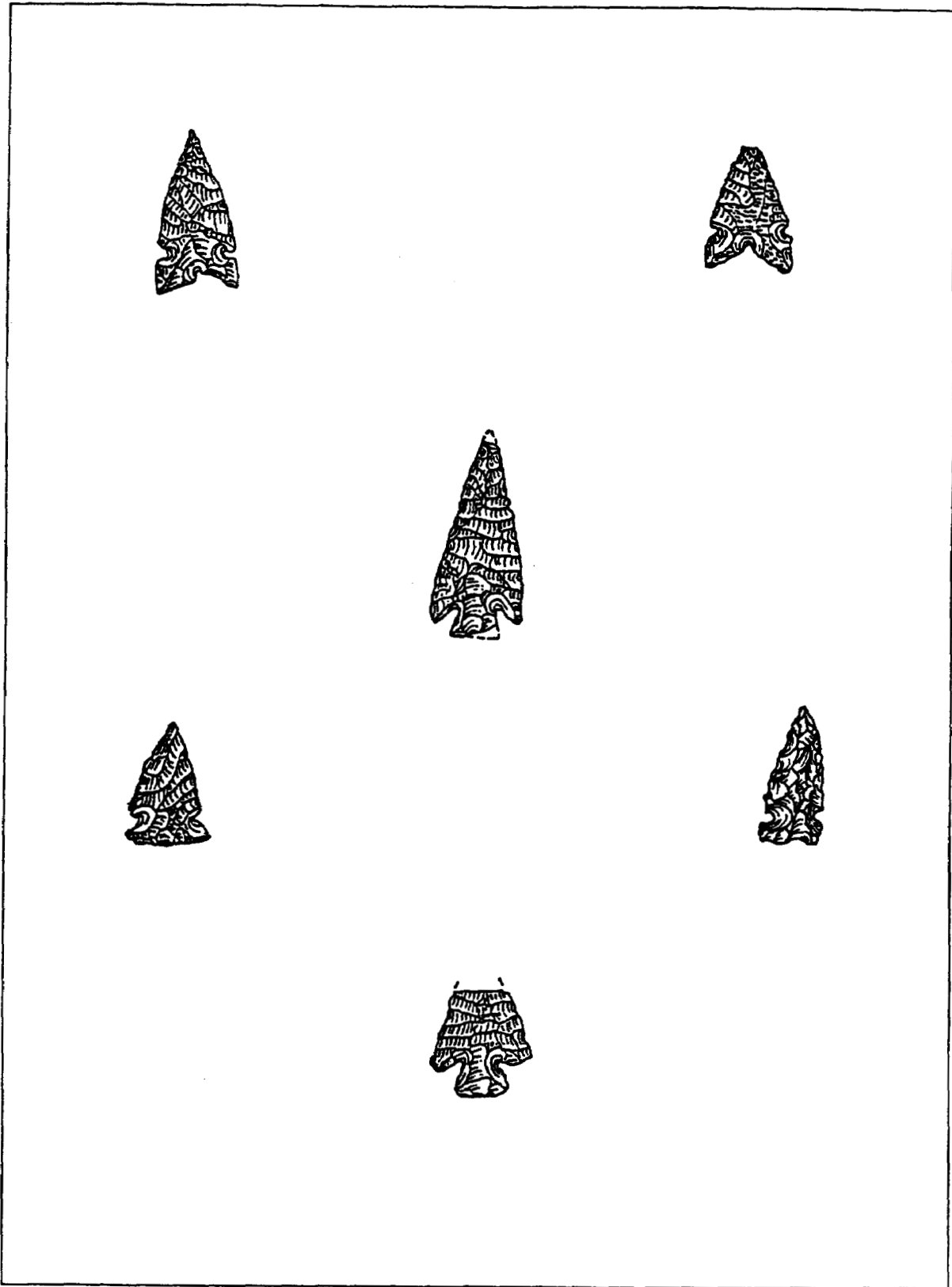
To date, none of the archaeological sites identified in WAG 5 are associated with early historic use of the area; all are related to Native American hunter-gatherer use.



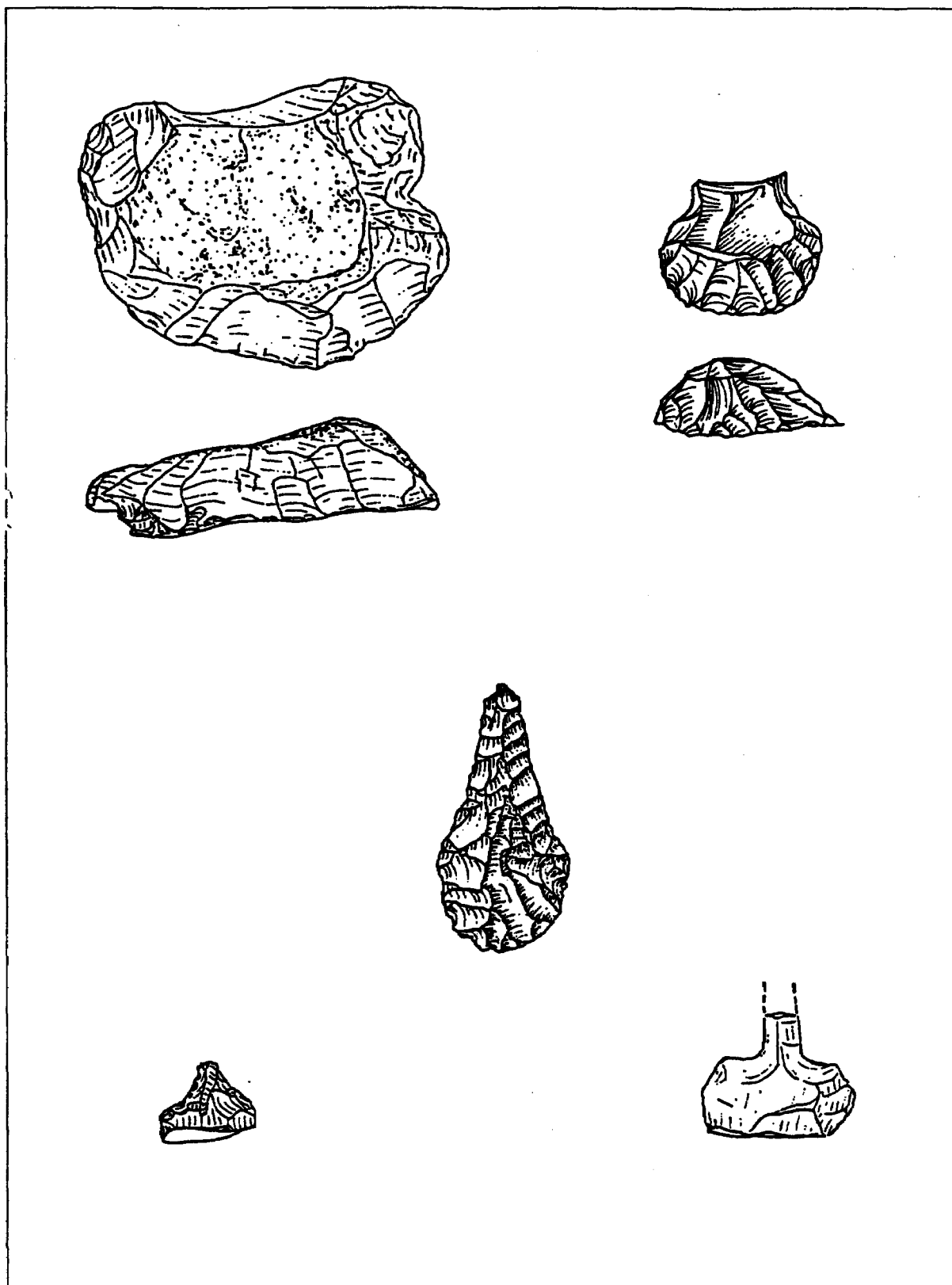
**Figure 3-2.** Early Prehistoric artifacts from WAG 5.



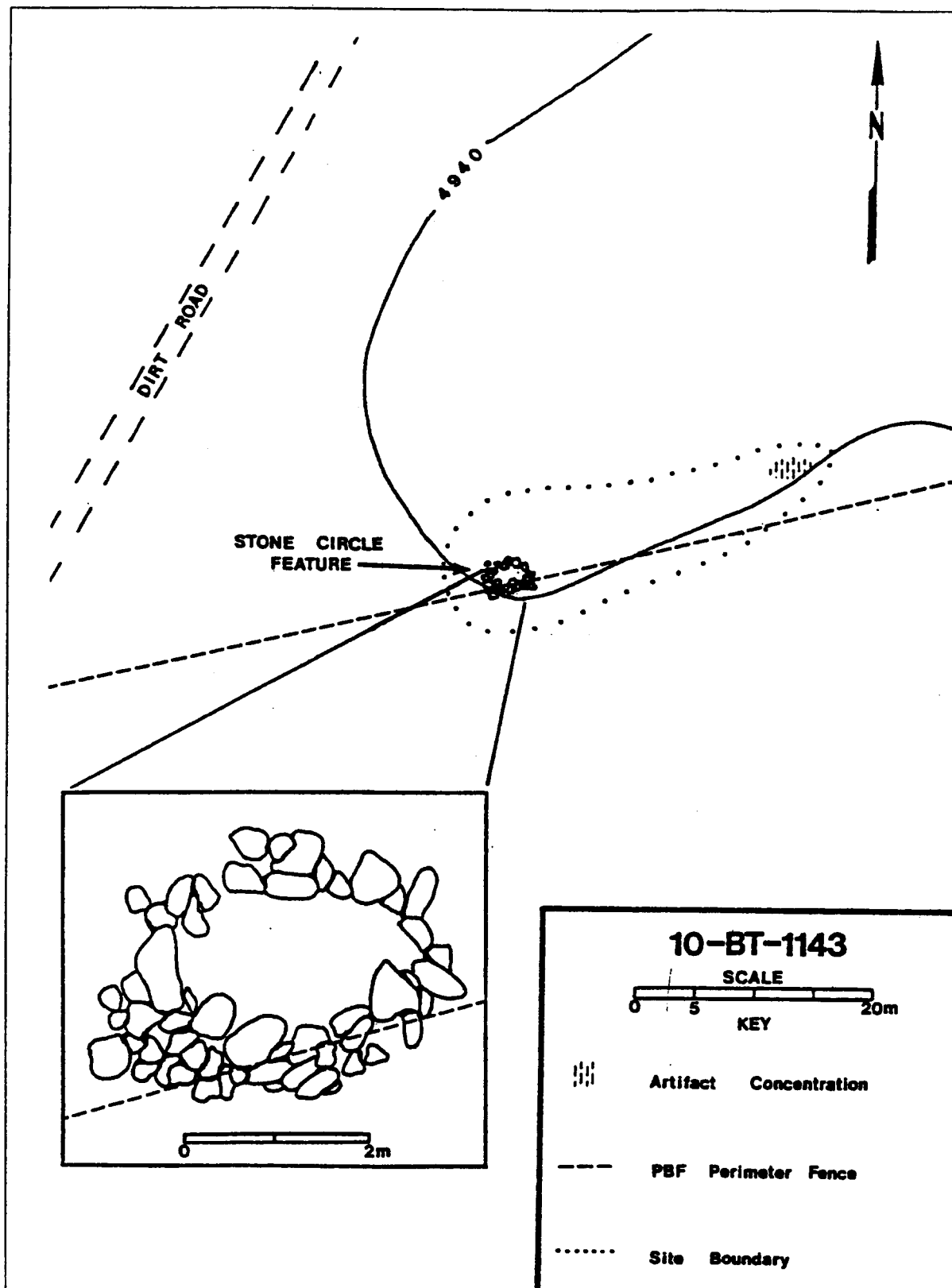
**Figure 3-3.** Middle Prehistoric artifacts from WAG 5.



**Figure 3-4.** Late Prehistoric artifacts from WAG 5.



**Figure 3-5.** Miscellaneous chipped stone tools from WAG 5.



**Figure 3-6.** Rock Feature/Hunting Blind from WAG 5.

### **3.1.2 Historic Buildings Summary**

The experiments conducted within the PBF complex were part of the AEC's Reactor Safety Program. This group was concerned with safety issues associated with commercial use of atomic energy, and sponsored research into such issues as the design requirements for containment buildings and the behavior dynamics of reactors under runaway conditions. In the early part of the 1960s, the four Special Power Excursion Reactor Test (SPERT) reactors built at the INEEL (then the National Reactor Testing Station) carried out the major portion of the Reactor Safety Program originally started in the 1950s at another INEEL facility. These experimental designs provided the nuclear industry with information needed for designing and operating boiling water, pressurized water, heavy water, and open pool reactors, and thereby went a long way toward promoting a commercial nuclear power industry in the United States. Later in the early 1970s, the one-of-a-kind PBF was the only reactor in the world where severe fuel rod burst tests were performed on the order of milliseconds, and where loss-of-coolant accidents could be simulated within a special assembly that fit inside the main reactor core. Like the SPERT series, it advanced the safety of commercial power reactors. In the 1980s, the SPERT/PBF took on a new research mission directed toward waste management. At this time, many facilities were renamed and modified for new missions that continue today. A preliminary survey of DOE-ID administered buildings (Arrowrock Group, Inc. 1997) indicates that 16 of the 27 buildings within the PBF complex are potentially eligible for nomination to the National Register of Historic Places.

The ARA (Army Reactors Area) was built from 1957 - 1965 for the U.S. Army to test reactor concepts suitable for mobile power plants. The objective was to develop a family of nuclear power plants in a range of kilowatt capacity configurations. Some would be stationary, others mobile. They were intended to replace diesel-powered plants in isolated or challenging locations where fuel supply lines were costly to maintain. Three test reactors were constructed and operated: the Stationary Low Power Reactor, the Gas Cooled Reactor Experiment, and the Mobile Low Power Reactor. The Army cancelled the program in 1965, because of ongoing design difficulties and the high cost of building and operating the plants. War priorities (Vietnam War) also supplanted the funding for the program. After the Army left, the complex was renamed (Auxiliary Reactor Area) and the facilities were adapted to provide technical support for other NRTS programs. Decontamination and demolition began in 1988.

## **3.2 Ongoing Investigations**

Several cultural resources investigations are ongoing within WAG 5. For archaeological and Native American sites, the primary activity is monitoring of known resources for adverse impact. Members of the INEEL Cultural Resource Management Office and the Shoshone-Bannock Tribes monitor Native American burial sites within the area twice yearly. Other archaeological sites are also regularly revisited and evaluated through an ongoing INEEL-wide program administered through the INEEL CRM Office. Few impacts have been observed, possibly due to relatively low levels of activity within the facilities that make up WAG 5. Ground disturbing activities are often subject to archaeological monitoring within WAG 5 due to the high incidence of inadvertent discoveries of cultural materials there. Finally, surveys in advance of ground disturbing activities are also continually ongoing, to ensure that modern work processes impact no known or as yet unknown resources.

Activities associated with historic buildings and structures within WAG 5 are tied closely to decontamination, dismantlement, demolition, and maintenance schedules. Currently there are no ongoing investigations.

## 4. CONCLUSIONS AND RECOMMENDATIONS

The sandy ridges and small playas that surround the WAG 5 facilities in the south-central portion of the INEEL may be some of the most archaeologically sensitive areas on the site. For the most part, these sites are undisturbed and subject to little threat from ongoing use of the PBF facilities, demolition of the ARA facilities, and other work projects in the WAG 5 area. Surveys conducted in advance of all proposed ground disturbance and monitoring of known resources also helps to ensure that ongoing environmental cleanup and restoration activities are having no adverse effects on the archaeological sites that are known to exist. Protection does require constant vigilance, though, as well as a willingness to change work processes when necessary to stop impacts to the fragile remnants of human activity and Native American culture that are so common.

WAG 5 is to be commended for their past and continuing efforts to protect cultural resources. The personnel who work at PBF and ARA have been forced to deal with cultural resources and highly sensitive Native American human remains more than any other INEEL facility and they have willingly incorporated the protection of these resources into their work processes. They have also supported efforts to document the historic built environment in advance of major changes (e.g., demolition) to it.

It is recommended that cultural resource issues continue to be fairly high profile within WAG 5. This is critical for maintaining good relations with the Shoshone-Bannock Tribes as well as other stakeholders with an interest in cultural resources (Idaho State Historic Preservation Office, local historical and archaeological societies, etc.). Several activities could enhance and perhaps even streamline cultural resource protection within WAG 5.

- Continue yearly monitoring of Native American burial sites with direct involvement of the Shoshone-Bannock Tribes. Review current work control documentation supporting these efforts.
- Continue monitoring of all ground disturbing activities proposed in the vicinity of Native American human burial sites. Review current work control documentation supporting these efforts.
- Consult with Shoshone-Bannock Tribes to locate other sites of sacred/traditional importance within WAG 5 and begin active protection of any resources identified.
- Continue to schedule archive reviews and/or new archaeological surveys in advance of all ground disturbing projects within WAG 5.
- Complete full recording of lava tube cave located within the ARA complex.
- Expand archaeological survey in area surrounding the ARA complex.
- In consultation with the Shoshone-Bannock Tribes and Idaho State Historic Preservation Office, conduct test excavations and archaeological mitigation at archaeological sites located in close proximity to PBF and ARA facilities to prevent future inadvertent disturbance.
- Conduct archaeological awareness training sessions for all employees at PBF and those conducting environmental restoration activities there and at ARA.



- Begin Historic American Engineering Record documentation of significant buildings at PBF (PER-606, PER-609, PER-612, PER-613, PER-619, PER-620) before decontamination and demolition are initiated.
- As part of the Historic American Engineering Record for PBF, initiate a study of the unique landscape that was designed for the PBF complex.
- As part of the Historic American Engineering Record for PBF, identify and document artifacts associated with the historically significant programs and projects conducted there.

## 7. REFERENCES CITED

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## **Appendix A: Cultural Resource Location Map**

Appendix A contains a map showing the location of the single site recorded during the EESC cultural resource investigation. The locational information provided in this Appendix is distributed for Official Use Only and may have been removed from some versions of the document. It is exempted from the Freedom of Information Act under Section 9 of the Archaeological Resources Protection Act of 1979 (as amended) and under Section 304 of the National Historic Preservation Act of 1966 (as amended). Distribution of any cultural resource locational information from this document and particularly from this Appendix must be approved in advance by contacting the INEEL CRM Office, PO Box 1625-2105, Idaho Falls, ID 83415, telephone: (208) 526-0916.